

THE EARLY STAGES OF *COLEOPHORA FUSCICORNIS*  
ZELLER, 1847 (LEP.: COLEOPHORIDAE)

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THE ACCOUNT GIVEN by Emmet (1996) was based on that written by Uffen in Emmet & Uffen (1975). Since his descriptions both of the larva and life history were incomplete, in 1994 I went in search of new material to Fingringhoe Wick Nature Reserve, Essex, where I had discovered the species in 1973. However, the open area where it had occurred was overgrown by scrub and I failed to observe it elsewhere. An opportunity to visit the only other known locality in Britain, close to a sea wall on the Essex coast, did not arise until 14 June 1996, when Dr John Langmaid drove me to the site. We found adults in good numbers, flying in the sunshine. Accordingly I made a second visit on 12 July to search for larval cases on the foodplant, smooth tare *Vicia tetraspermum*; likewise, they were not uncommon, up to five cases occurring on a single plant. I collected a sufficiency, but the number was later increased by young larvae that had been feeding in their pod without visible sign of their presence and tiny larvae that must have hatched from the supply of foodplant I had gathered at random. I intended a third visit to return the surplus, but unwisely combined the trip with a reconnaissance of the south-east coast of Suffolk, to see if the moth was present in that county. It was late afternoon after several long walks before I located a spot where smooth tare occurred, but without trace of *C. fuscicornis*. I thought it would be wrong to liberate my unwanted stock in Suffolk, and by then I was too tired for the additional mileage and subsequent walk that a visit to the Essex locality would have involved.

Since there are minor inaccuracies as well as omissions in Raymond Uffen's account, completed two years after I had given him the larvae, I will describe the life history in full.

### Ovum

Laid on smooth tare *Vicia tetraspermum*, probably not on the pod itself, which is only beginning to form at the commencement of the flight period. In captivity newly hatched larvae were seen walking freely and this is likely to occur also in natural conditions, where they wander in search of a suitable pod. No hatched ovum was observed on any of the pods used as first cases. June-July.

### Larva

Raymond Uffen evidently described a larva in its penultimate instar, which differs in certain respects from the final instar. This may be characteristic of the *trifolii* group, since Stuart (1958) states without detail that there are differences in pigmentation between the third and fourth larval instars of

*C. frischella* (Linnaeus) (?*alcyonipennella* (Kollar) *sensu* Stuart). The description that follows is of the final instar.

Head honey-brown. Body whitish green; prothoracic plate honey-brown with four black spots, two each side of a narrow median sulcus, one lateral and one posterior; other plates black; mesothoracic plate divided into four elongate sclerites, the posterior pair approximate, the anterior pair centred over the tips of the posterior pair and at an angle; metathoracic plate two well-separated elongate sclerites; lateral plates large, generally round and of equal size, but in some larvae that on thoracic segment 1 larger and elongate in the horizontal plane; anal plate large, covering whole segment; thoracic legs honey-brown with posterior black spot; four pairs of abdominal prolegs. In the first instar, only the prothoracic plate is pigmented, pigmentation extending to the mesothoracic plate in the second and third instars and to the metathoracic plate in the final instar.

Newly-hatched larvae were observed to walk freely and rapidly, using only their thoracic legs and anal claspers; the other abdominal prolegs appear to be non-functional. The body is held horizontal and not arched, as described for other species by Sich (1904-05). When the larva finds a suitable pod, it enters it and feeds on the ripening peas. At this stage, there is no evidence of its presence; Uffen is incorrect in stating that there is already an anal opening for the ejection of frass. When the contents of the pod have been consumed, the larva severs it untidily near the stalk and, using it as a case, walks in search of another pod to which it attaches its case, generally at the tip and in alignment, but sometimes near the stalk, where it may be fixed vertically (mouth angle 90°) or almost horizontally (mouth angle c. 5°). This variation is possible because there is no silken reinforcement at the oral opening of the case. Most seed-feeding coleophorids attack a succession of small seeds involving frequent transportations of the case, and whilst feeding the posterior part of the larva remains within its case; therefore a well-formed oral opening that can be attached firmly with silk and allows constant passage is needed. *C. fuscicornis* uses only three or four pods and wholly enters the new pod, returning only to defecate; this is the probable reason why the oral and anal openings are left as jagged, unfashioned holes. The pod in which the larva is feeding is green, but the one used as a case turns yellowish-brown or greyish-brown and this contrast in colour makes the case conspicuous. During the period in which the contents of the second pod are being eaten, the larva cuts an untidy, irregular slit at the tip of the pod it is using as a case and from then onwards frass is ejected. Soon a third pod is needed and the larva appears to have three strategies for making the transfer. Most often the first pod is large enough, is severed from the second and the larva continues to use it as a portable case. Sometimes, when the first pod is too small, the second pod is severed and the larva carries both pods in tandem so that when the third pod is attached, the three are strung together

like beads. The third method is for the larva to vacate the pod and walk fully exposed in search of another. It moves swiftly and its gait is as described for the newly-hatched larva. Clover-feeding members of the *trifolii* group can also change florets without the use of a case.

The inner walls of the pod used as a case are thinly spun with silk, but otherwise little silk is used during the feeding phase. When feeding is finished, the larva spins a tough, trivalved, pale reddish-brown case or cocoon at the anal end of its pod. It is firmly attached to the inner walls and there appears to be no anal opening to enable the larva to move to the oral end of the pod for locomotion in the spring. Uffen noted that in January the larvae were already facing the valves for pupation and emergence. The case is attached for the winter low down to a stem or to detritus. Larvae are fully-fed in late July or early August.

### Pupa

In the cocoon-like case spun inside the pod, the transition probably occurring in April.

### Imago

Univoltine, occurring in late May and June. The adult flies or is easily disturbed in sunshine. There is probably a long emergence period, since newly-hatched and fully-fed larvae are found simultaneously.

### Distribution

Known in Britain only from Essex, where it occurs close to the sea on sparse grassland suited to the growth of smooth tare. Though at present reported from only one site, it is likely to be found in similar localities in the south-east of England.

### References

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POSTSCRIPT: A second locality, situated on the Essex coast, was discovered by Brian Goodey on 17 May 1997.